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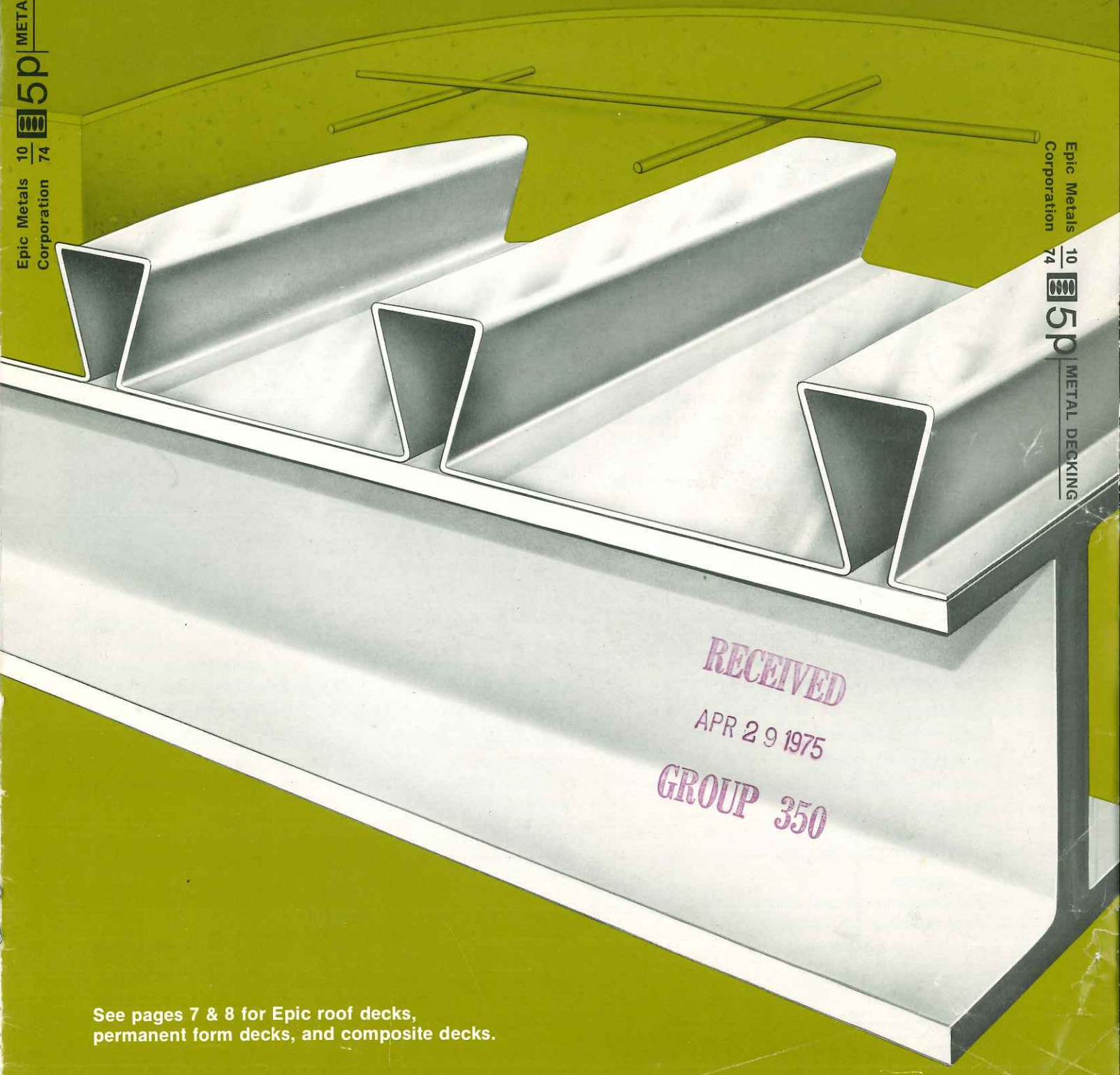
# EPICORE®

## COMPOSITE FLOOR SYSTEM

Epic Metals Corporation 10/74 5p METAL DECKING



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See pages 7 & 8 for Epic roof decks, permanent form decks, and composite decks.

Epic Metals Corporation 10/74 5p METAL DECKING

# EPICORE
## COMPOSITE FLOOR SYSTEM

### The EPICORE® Composite Floor System

Epic Metals Corporation manufactures a complete line of steel roof decks, floor decks, and composite decks, all conforming to AISI and SDI specifications. At the top of our line is EPICORE Composite Deck, the only 2-inch deep, 24-inch wide, triangular-ribbed deck manufactured in the United States. Versatile, economical, and easily installed, EPICORE sets the floor pace for the construction industry.

### Develops permanent bond with concrete. Provides tension reinforcement.

Two-inch deep inverted triangular ribs are the source of EPICORE's superior composite action. They provide a bonding surface for the concrete and create a mechanical lock between the slab and the deck. Repeated tests and field installations have established the complete reliability of this process. EPICORE Composite Deck provides total positive reinforcement for the slab.

### Fire Ratings = Economy.

Our unexcelled fire ratings spell money saving floor construction when EPICORE is combined with either regular weight or lightweight concrete. For any composite floor design, EPICORE has the right ratings:

U.L. Fire Resistance Ratings
Unprotected EPICORE—U.L. Design #D904

**1 Hour Fire Resistance**
4 inches* regular weight concrete.

**1½ Hour Fire Resistance**
4¾ inches* regular weight concrete.

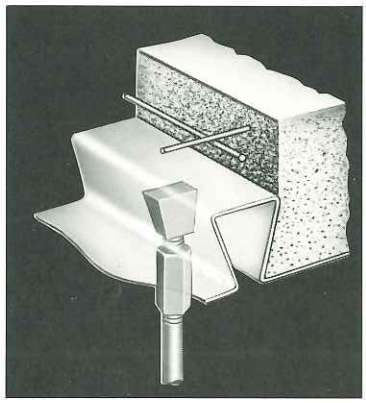
**2 Hour Fire Resistance**
4½ inches* lightweight (110 pcf) concrete or
5¼ inches* regular weight concrete.

**3 Hour Fire Resistance**
5¼ inches* lightweight (110 pcf) concrete or
6¾ inches* regular weight concrete.

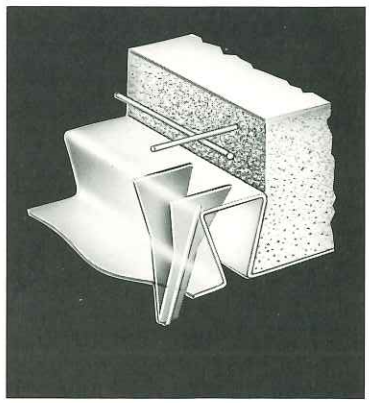
*Total slab depth

### Hanging System guarantees lifetime flexibility.

EPICORE's time and money saving hanging system is being used successfully in a growing number of hospitals throughout the United States, as well as in other facilities where utility equipment must be changed or moved frequently. Both hangers can be easily installed in rib openings during construction or later. Lights, ducts, pipes, or ceilings, suspended from EPICORE hangers, can be moved anywhere at anytime.



Wedge bolt hanger. Safe load capacity per hanger = 1000 lbs.*



Standard hanger. Safe load capacity per clip = 200 lbs.*

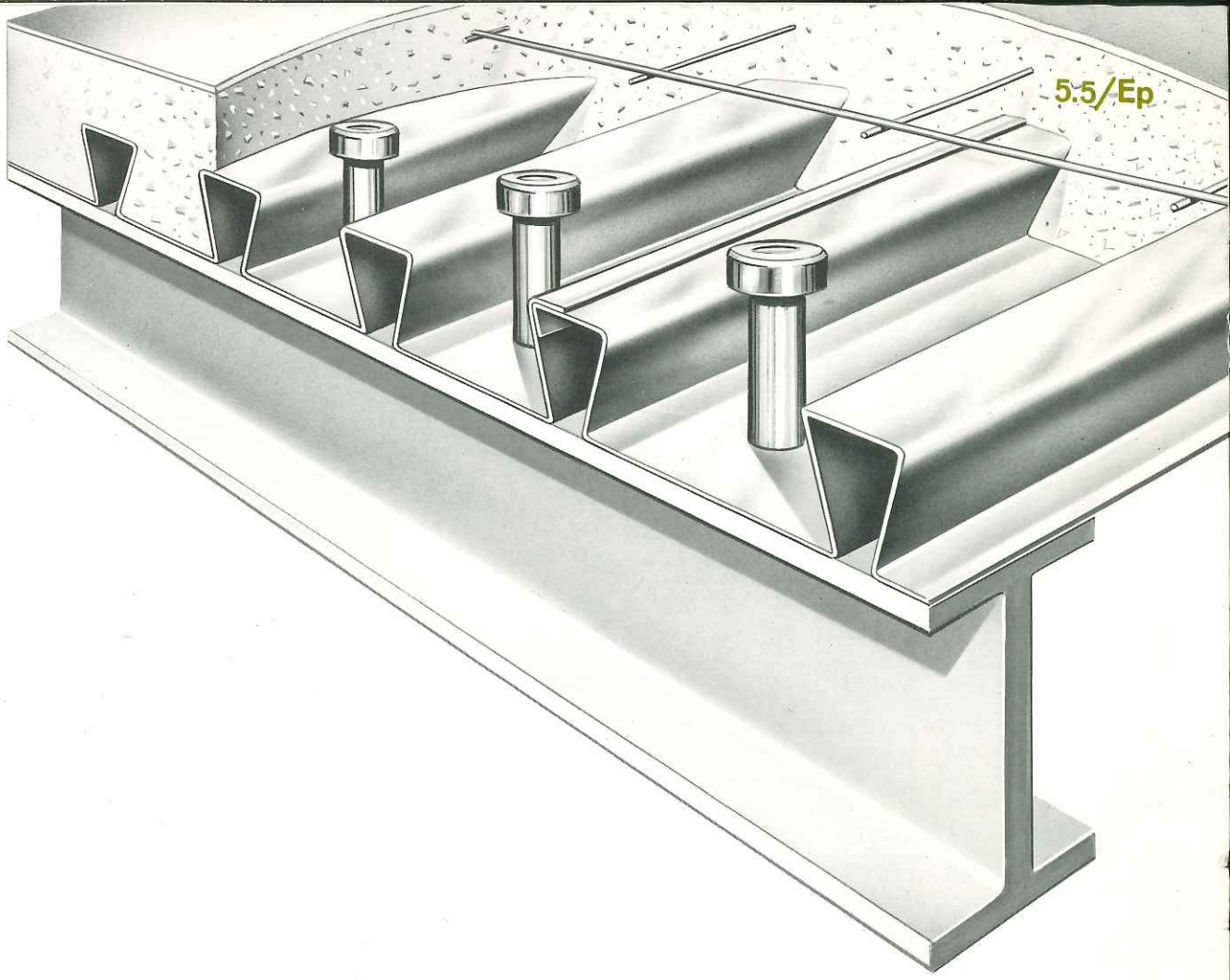
*Providing the floor system is designed to carry this load.

### EPICORE Concept 2 Floor System for Multiple-Unit Residential Properties.

Specifically designed for apartments, motels, and townhouses, the EPICORE Concept 2 Floor System provides spacious rooms without visible beams or other obstructions.

Although Concept 2 projects have been designed typically with masonry, poured concrete, or precast bearing walls, the system can be equally effective with structural steel or other bearing wall systems in installations requiring residential loading.

Photographs, engineering tables, architectural details, and specifications are included in a new EPICORE Concept 2 catalog, available now from Epic.




## Composite Beam Design

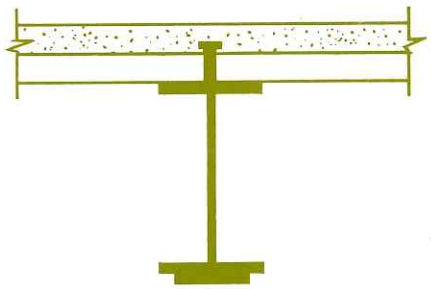
**With EPICORE, composite beams can be designed as if the slab were solid. Full AISC shear connector values can be developed.**

Composite Beam Design is the creation of a single structural unit out of a concrete floor slab and a steel beam. When structural shear connectors are welded to the top flange of a beam through the metal deck, the shear resistance of the connectors causes the slab and beam to act as one unit.

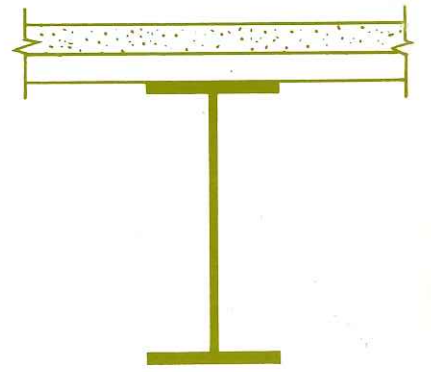
The result is a composite beam with structural properties far greater than those of a non-composite beam. Because composite beams are stronger, they can be lighter and shallower, with a consequent savings in material, building height, overall construction time, and overall construction costs.

The composite system performs best when each component is designed for maximum efficiency. Beams should be as far apart as possible. The metal deck must allow for the welding through of shear connectors and for maximum concrete coverage of shear connectors. The deck must also provide lateral support for the beam during construction.

EPICORE Composite Deck makes the whole system work better. It allows longer spans, trouble-free connector installation, greater concrete coverage around shear connectors, and more rigid lateral support. EPICORE means the ultimate in composite construction.



Composite W14x22 with
4″ x 1″ plate $I = 1700$ in$^4$ $S = 113$ in$^3$
Average wt. per ft = 32.1 lbs.



Conventional W18x64
$I = 1050$ in$^4$ $S = 118$ in$^3$

EPICORE

COMPOSITE FLOOR SYSTEM

**TABLE 1**
**Total Allowable Superimposed Loads (psf)**
Working stress design $f_s = 20{,}000$ psi.
$N = 10$. $f_c = 3{,}000$ psi.

| Span (ft.) | Overall Slab Depth (in.) | — GAGE — | | | |
|---|---|---|---|---|---|
| | | 24 | 22 | 20 | 18 |
| 5 | 3½ | 299 | 386 | 477 | 477 |
| | 4 | 354 | 458 | 567 | 567 |
| 6 | 3½ | 249 | 322 | 398 | 398 |
| | 4 | 295 | 382 | 472 | 472 |
| 7 | 3½ | 213 | 276 | 341 | 341 |
| | 4 | 253 | 328 | 405 | 405 |
| | 4½ | 292 | 379 | 469 | 469 |
| 8 | 3½ | 187 | 241 | 279 | 298 |
| | 4 | 218 | 286 | 354 | 354 |
| | 4½ | 256 | 331 | 410 | 410 |
| | 5 | 290 | 361 | 460 | 467 |
| 9 | 3½ | 150 | 174 | 197 | 235 |
| | 4 | 196 | 215 | 274 | 315 |
| | 4½ | 227 | 235 | 304 | 365 |
| | 5 | 258 | 252 | 330 | 415 |
| 10 | 4 | 152 | 156 | 201 | 240 |
| | 4½ | 183 | 229 | 222 | 324 |
| | 5 | 209 | 272 | 238 | 355 |
| | 5½ | 235 | 307 | 376 | 382 |
| | 6 | 262 | 342 | 418 | 404 |
| 11 | 4 | 114 | 133 | 147 | 181 |
| | 4½ | 142 | 179 | 193 | 244 |
| | 5 | 163 | 215 | 244 | 267 |
| | 5½ | 183 | 242 | 299 | 282 |
| | 6 | 204 | 270 | 333 | 398 |
| 12 | 4½ | 111 | 138 | 154 | 189 |
| | 5 | 127 | 171 | 195 | 217 |
| | 5½ | 144 | 193 | 241 | 268 |
| | 6 | 160 | 215 | 268 | 323 |
| | 6½ | 174 | 236 | 295 | 372 |
| 13 | 5 | 100 | 136 | 157 | 176 |
| | 5½ | 113 | 155 | 195 | 219 |
| | 6 | 126 | 173 | 218 | 264 |
| | 6½ | 136 | 190 | 240 | 305 |
| | 7 | 150 | 208 | 262 | 364 |
| 14 | 5½ | 88 | 124 | 159 | 179 |
| | 6 | 99 | 139 | 178 | 218 |
| | 6½ | 107 | 153 | 196 | 252 |
| | 7 | 117 | 168 | 215 | 302 |
| 15 | 5½ | 69 | 100 | 130 | 148 |
| | 6 | 77 | 112 | 146 | 181 |
| | 6½ | 83 | 123 | 160 | 210 |
| | 7 | 91 | 135 | 176 | 252 |
| 16 | 6 | 59 | 90 | 119 | 150 |
| | 6½ | 63 | 98 | 131 | 175 |
| | 7 | 70 | 108 | 144 | 211 |
| 17 | 6½ | 47 | 78 | 107 | 146 |
| | 7 | 52 | 86 | 118 | 177 |
| 18 | 7 | 37 | 68 | 96 | 149 |

□ No shoring ▨ 1 line of shoring ■ 2 lines of shoring

The above loads may be used with the floor units on simple or continuous spans. Composite slab design to be based upon simple span analysis. A limit of L/360 was placed upon deflection of the composite slab.

Shoring requirements are based on a 20 psf construction load plus the weight of the wet concrete.

Deflection under weight of wet concrete does not exceed L/200 of the span. Shoring is also calculated for deck continuous across three or more spans. For simple and double span—Tables 2 and 3, Page 5.

Lightweight Concrete—(3000 psi):
Unshored—Capacity same as regular weight concrete (Table 1.)
Shored—Add weight difference from Tables 2 and 3 to value in Table 1.

No information contained in this catalog is intended to replace the judgment of experienced structural engineers.

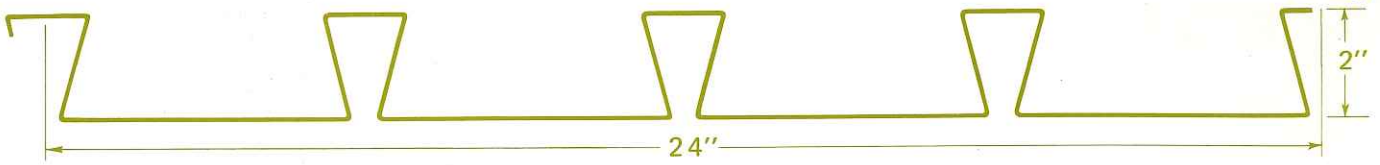



**TABLE 2—Maximum Clear Spans Without Shoring—Regular Weight Concrete (145 pcf)**

| Span | Slab Depth | 3½″ | 4″ | 4½″ | 5″ | 5½″ | 6″ | 6½″ | 7″ |
|---|---|---|---|---|---|---|---|---|---|
| | Slab Wt. | 42 psf | 48 psf | 54 psf | 60 psf | 66 psf | 72 psf | 78 psf | 84 psf |
| | Gage | ft.-in. | ft.-in. | ft.-in. | ft.-in. | ft.-in. | ft.-in. | ft.-in. | ft.-in. |
| Simple | 24 | 6-6 | 6-3 | 5-11 | 5-8 | 5-6 | 5-4 | 5-2 | 5-0 |
| | 22 | 7-9 | 7-6 | 7-2 | 6-10 | 6-7 | 6-4 | 6-2 | 6-0 |
| | 20 | 8-9 | 8-5 | 8-0 | 7-8 | 7-4 | 7-2 | 6-10 | 6-8 |
| | 18 | 10-0 | 9-6 | 9-1 | 8-9 | 8-5 | 8-2 | 7-10 | 7-8 |
| Double | 24 | 7-11 | 7-6 | 7-3 | 7-0 | 6-9 | 6-6 | 6-3 | 6-0 |
| | 22 | 9-5 | 9-0 | 8-8 | 8-4 | 8-0 | 7-9 | 7-6 | 7-3 |
| | 20 | 10-5 | 9-11 | 9-6 | 9-2 | 8-10 | 8-6 | 8-3 | 8-0 |
| | 18 | 12-2 | 11-5 | 11-0 | 10-8 | 10-3 | 9-11 | 9-7 | 9-3 |
| Triple or Contin. | 24 | 8-1 | 7-8 | 7-5 | 7-0 | 6-10 | 6-8 | 6-5 | 6-3 |
| | 22 | 9-10 | 9-4 | 9-0 | 8-7 | 8-3 | 8-0 | 7-9 | 7-6 |
| | 20 | 10-11 | 10-4 | 10-0 | 9-7 | 9-3 | 8-11 | 8-8 | 8-4 |
| | 18 | 12-5 | 11-10 | 11-4 | 10-11 | 10-6 | 10-2 | 9-10 | 9-7 |

**TABLE 3—Maximum Clear Spans Without Shoring—Lightweight Concrete (110 pcf)**

| Span | Slab Depth | 3½″ | 4″ | 4½″ | 5″ | 5¼″ | 5½″ | 6″ | 6½″ | 7″ |
|---|---|---|---|---|---|---|---|---|---|---|
| | Slab Wt. | 33 psf | 38 psf | 42 psf | 47 psf | 49 psf | 51 psf | 56 psf | 60 psf | 65 psf |
| | Gage | ft.-in. | ft.-in. | ft.-in. | ft.-in. | ft.-in. | ft.-in. | ft.-in. | ft.-in. | ft.-in. |
| Simple | 24 | 7-1 | 6-9 | 6-6 | 6-3 | 6-1 | 6-0 | 5-9 | 5-8 | 5-6 |
| | 22 | 8-5 | 8-0 | 7-9 | 7-6 | 7-4 | 7-3 | 7-0 | 6-10 | 6-7 |
| | 20 | 9-6 | 9-0 | 8-9 | 8-5 | 8-3 | 8-1 | 7-10 | 7-8 | 7-4 |
| | 18 | 10-9 | 10-3 | 10-0 | 9-6 | 9-5 | 9-3 | 9-0 | 8-9 | 8-5 |
| Double | 24 | 8-8 | 8-3 | 7-11 | 7-7 | 7-6 | 7-4 | 7-2 | 7-0 | 6-9 |
| | 22 | 10-4 | 9-10 | 9-5 | 9-1 | 9-0 | 8-10 | 8-6 | 8-4 | 8-0 |
| | 20 | 11-4 | 10-10 | 10-5 | 10-0 | 9-11 | 9-8 | 9-4 | 9-2 | 8-10 |
| | 18 | 13-1 | 12-6 | 12-2 | 11-6 | 11-5 | 11-2 | 10-10 | 10-8 | 10-3 |
| Triple or Contin. | 24 | 8-10 | 8-5 | 8-1 | 7-10 | 7-8 | 7-7 | 7-4 | 7-0 | 6-10 |
| | 22 | 10-8 | 10-2 | 9-10 | 9-5 | 9-3 | 9-2 | 8-10 | 8-7 | 8-3 |
| | 20 | 11-10 | 11-3 | 10-11 | 10-6 | 10-4 | 10-2 | 9-10 | 9-7 | 9-3 |
| | 18 | 13-4 | 12-9 | 12-5 | 11-11 | 11-9 | 11-7 | 11-2 | 10-11 | 10-6 |

Deflection of deck will not exceed L/200 of the span under the weight of the wet concrete. Shoring Tables are based on a 20 psf construction load plus the weight of the wet concrete. Runways and planking are recommended for concrete placement. Slab weight includes 4 psf for deck.

**TABLE 4—Suggested Temperature Mesh**

| Depth of Slab | 6 x 6 Welded Wire Fabric |
|---|---|
| 3½″—4″ | 8/8 |
| 4½″— 5½″ | 6/6 |
| 6″— 7″ | 4/4 |

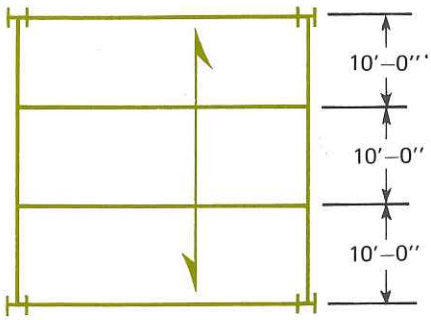
**TABLE 5—Section Properties—EPICORE Deck**

| Gage | Weight psf | $A_S$ in.² | I△ in.⁴ | S in.³ |
|---|---|---|---|---|
| 24 | 1.82 | .518 | .268 | .191 |
| 22 | 2.26 | .660 | .399 | .278 |
| 20 | 2.71 | .790 | .474 | .349 |
| 18 | 3.61 | 1.040 | .619 | .459 |

Properties computed in accordance with A.I.S.I. specifications for the design of light gage cold-formed steel structural members. Latest Edition.

## Design procedure

**PROBLEM:** To determine the most economical EPICORE design for given design problem.




**GIVEN:**

Specifications Concrete f'c = 3000 psi
A.C.I. Building Code.
For economy and speed no shoring is to be used.

**LOADS:**

| | | |
|---|---|---|
| Live Loads | = | 125 psf |
| Partitions | = | 35 psf |
| Ceiling | = | 8 psf |
| Fin. Floor | = | 2 psf |
| Electric, Plmbg., HVAC | = | 5 psf |
| Sprinklers | = | 5 psf |
| Total Superimposed Load | = | 180 psf |

1. Enter Table 1 for 10'-0" span, 4" concrete slab with 20 gage EPICORE. Total superimposed load equals 201 psf with no shoring required.
2. Suggested temperature mesh, check Table 4. 4" slab use 6 x 6—8/8 mesh.
3. Deflection will not exceed L"/360 under any superimposed load shown in Table 1.
4. 4" slab has 1-hour fire rating. For 2-hour fire rating, use 4½" lightweight slab or 5¼" regular weight slab.

**WARRANTY**

Epic Metals Corporation warrants that all material and mechanical parts to be furnished under this contract, so far as the same is of our manufacture, shall be free from defects. In the event of the failure of the material or mechanical parts within one year from the date of delivery, or from the date of completion of erection or installation if the seller is required to erect or install, and such failure is attributable to defects found to have existed at the time of delivery or erection or installation, Epic Metals liability hereunder shall be limited to furnishing necessary replacement material or parts. If Epic Metals is required to erect or install material or mechanical parts under this contract, Epic Metals warrants that all erection or installation work shall be done in a good and workmanlike manner, and will repair or rectify any work performed in an unworkmanlike manner if notified in writing within one year from the date of completion of the work. Epic Metals assumes no liability for damages, losses or injuries, direct or consequential, that may arise from use of or inability to use our product.

EXCEPT AS PROVIDED, THERE ARE NO EXPRESS OR IMPLIED WARRANTIES AS TO MERCHANTABILITY OR FITNESS OF THE MATERIAL OR EQUIPMENT FOR ANY PARTICULAR PURPOSE.

**TOLERANCES**

All material is furnished in accordance with tolerances as shown in:
American Iron and Steel Institute
Steel Products Manual May 1970
Carbon Sheet Steel
Section XIII Roofing and Siding

## Specifications EPICORE® Composite Slabs

1. GENERAL—All areas noted on the plans or specifications shall be covered with composite slabs, using EPICORE deck as manufactured by Epic Metals Corporation. The EPICORE deck shall serve as form, total positive reinforcement and temperature reinforcement for the lower half of the slab. Full scale tests by independent laboratory substantiating composite ability shall be available if required.
2. MATERIAL—Epic composite floor form units shall be formed of _____ USS Gage Steel sheets conforming to A611-70 with a minimum yield strength of 40,000 psi. The steel shall have received, before being formed, a metal protective coating of zinc conforming to ASTM-A-525-71 (wiped coating) and to Federal Specification QQ-S-775d, Type 1, Class e.
3. CONSTRUCTION—To provide a positive key-bond with the concrete the EPICORE deck shall have integral pyramidal shaped ribs, all continuous and complete in cross-section, and spaced not more than 6" on center. Ribs shall be formed to a depth of not less than 2" with an opening of not more than ⅝" at the base and width of not less than 1½" at the apex. The area of steel provided as positive reinforcement shall not be less than ____ sq. in./ft. The bottom of the sheets shall form a substantially flat and continuous surface.
4. DESIGN—EPICORE composite slab construction shall be capable of supporting the specified uniform loads in accordance with the allowable live load table and design factors shown in the manufacturer's catalog for this product.
5. ERECTION—EPICORE Composite Deck units shall be laid in strict accordance with the manufacturer's instructions and as shown on a layout prepared for the erector's use. At all supports attach the units to the supporting members with ¾" diameter puddle welds at 12" center to center of welds.

   Deck units shall span 3 or more supports wherever practical.

   Side joint shall be joined by welding or screws at midspan for spans 4' 0" to 6' 0". For spans over 6' 0" fasten joints at third points of the span.
6. WORK TO BE INCLUDED IN OTHER CONTRACT—Concrete for EPICORE composite slab construction shall conform to the following specifications.

   a. Base Preparation—Prior to concreting, the surface of the sheets shall be cleaned of all debris, grease, oil and other deleterious substances to the satisfaction of the contractor's and/or architect's representative.

   b. Materials and Mixture—Architect shall provide specifications for cement, fine and coarse aggregates, water-cement ratio and mixing for concrete providing an ultimate compressive strength of 3,000 psi or other strength required. It is recommended that the specified mixture shall have a slump of from 4 to 5 inches, insuring sufficient moisture in the concrete to allow optimum bonding of the concrete to the deck surface and to minimize shrinkage.

   Concrete with admixtures containing chloride salts is not to be used with EPICORE Composite Deck.

   c. Reinforcement—Shrinkage and thermal stress reinforcement in the form of welded wire mesh and type suitable for the depth of the slab as called for in the manufacturer's catalog, shall be placed above the mid depth of the slab and at least 1" below the top surface. This mesh is placed in the top part of the slab in order to provide optimum control of shrinkage at the exposed surface.

   d. Placement of Concrete—Concrete shall be mixed and placed in accordance with the American Concrete Institute's "Building Code Requirements for Reinforced Concrete" (ACI 318-71).

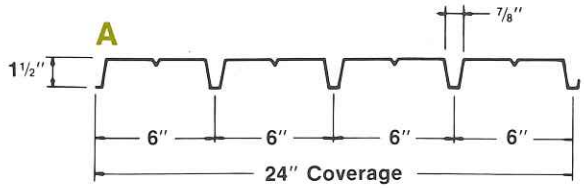
   e. Curing—After placement, the concrete shall be allowed to cure, without being loaded, until it reaches 70% of the specified ultimate compressive strength. Curing shall be done in accordance with good concrete curing practice.

   f. Construction Joints—Construction joints shall be placed at midspan in accordance with the provisions of Section 704 of the above ACI Code.

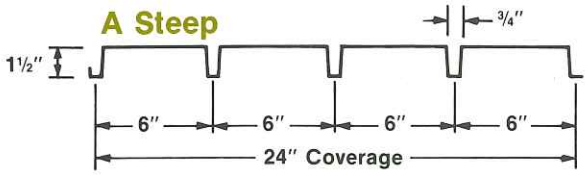
   g. Shoring—When required, in conformance with the allowable shoring tables on page 5, the EPICORE composite slab shall be temporarily shored. The design of the shoring shall be in accordance with local building code provisions. The shoring shall be left in place until the concrete attains 70% design compressive strength.

## Roof Decks

### A




### A Steep

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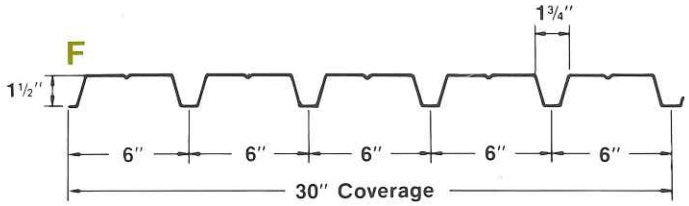
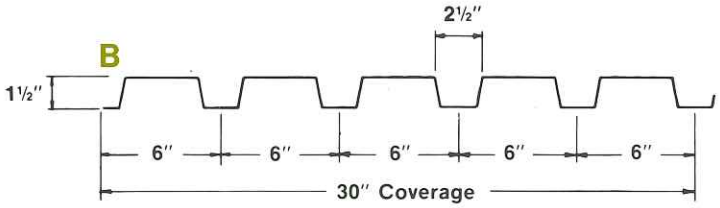
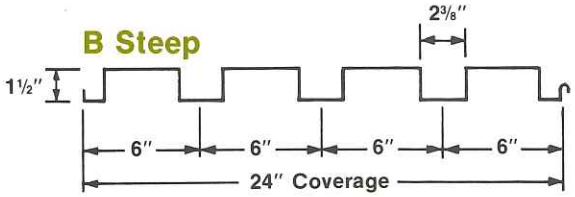


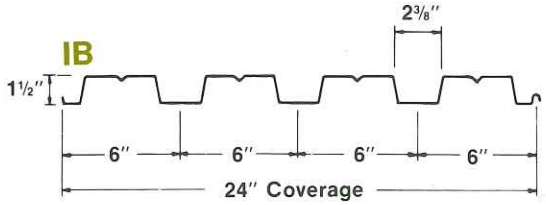

### B



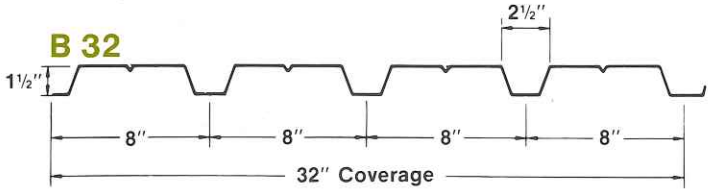

### B Steep



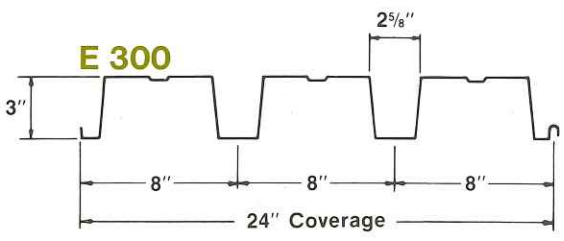

### IB




### B 32




### E 300

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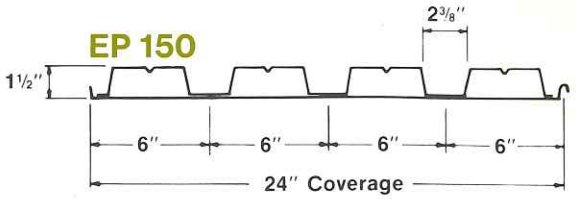
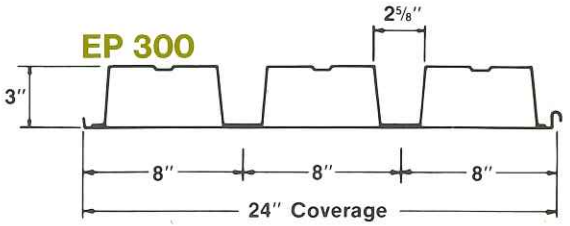
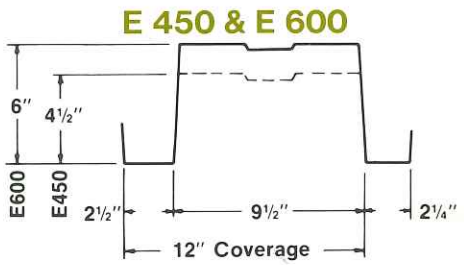


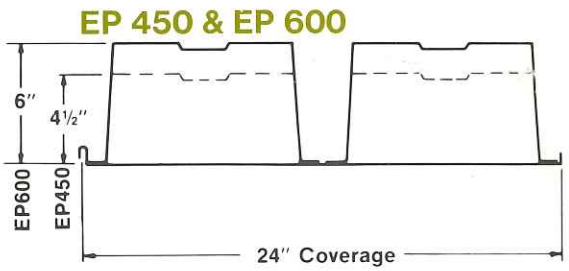

### EP 300



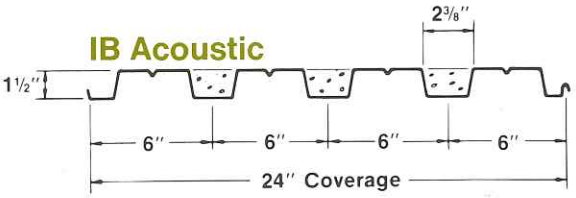

### E 450 & E 600



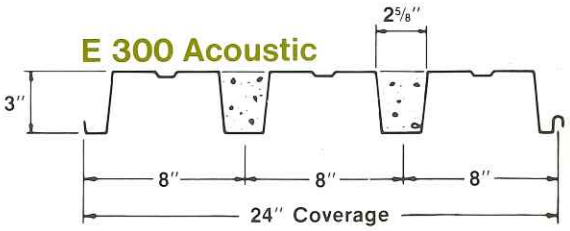

### EP 450 & EP 600




### IB Acoustic

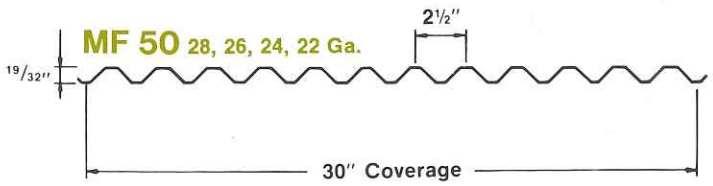


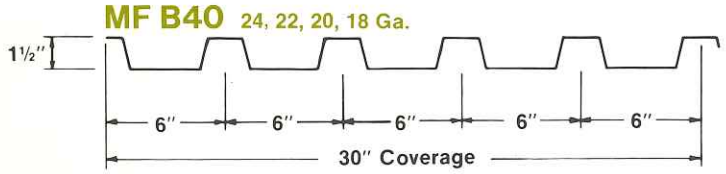

### E 300 Acoustic

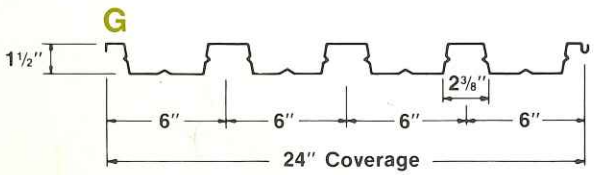


# EPIC® Steel Deck

## Permanent Form Decks




**Other Epic catalogs include:**

EPICORE Concept 2 Floor System (for multiple-unit residential construction)
Epic Composite Decks: EC 366 & EC 150
Epic Steel Deck
Epic Modular Buildings

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